INDEPENDENT ASSURANCE
LIMITED OBSERVATION CHECKLIST

Name _____
Qualification # _____ Date _____

MOISTURE-DENSITY RELATION OF SOILS
FOP FOR AASHTO T 99 and AASHTO T 180

Tests Performed According to Procedure?	**Yes**	**No**
1. If damp, sample dried in air or drying apparatus, not exceeding 60°C (140°F)?	_____	_____
2. Sample pulverized and adequate amount sieved over the appropriate sieve (4.75 mm / No. 4 or 19.0 mm / ¾ in) to determine oversize (coarse particle) percentage?	_____	_____
3. Sample passing the sieve has appropriate mass?	_____	_____
4. Sample mixed with water to 4 to 6 percent below expected optimum moisture content?	_____	_____
5. Layer of soil placed in mold with collar attached?	_____	_____
6. Mold placed on rigid and stable foundation?	_____	_____
7. Soil compacted with appropriate number of blows (25 or 56)?	_____	_____
8. Soil placed in appropriate number of approximately equal layers (3 or 5)?		
9. Collar removed without sheering off sample?	_____	_____
10. Approximately 6 mm (1/4 in) of compacted material above the top of the base of the mold?	_____	_____
11. Soil trimmed to top of mold with the beveled edge of the straightedge?	_____	_____
12. Mass of mold and contents determined to appropriate precision?	_____	_____
13. Wet mass of specimen multiplied by appropriate factor to obtain wet density 1060 (30), 471 (13.33)?	_____	_____
14. Soil removed from mold using sample extruder?	_____	_____
15. Soil sliced vertically through center?	_____	_____
16. Moisture sample removed from one cut face insuring all layers are represented?	_____	_____
17. Moist mass determined immediately to 0.1 g?	_____	_____

OVER

Tests Performed According to Procedure?	**Yes**	**No**
18. Moisture sample mass of correct size?	_____	_____
19. Sample dried and water content determined according to T 255/T 265?	_____	_____
20. Remainder of material from mold broken up to about passing sieve size and added to remainder of original test sample?	_____	_____
21. Water added to increase moisture content of the remaining sample in 1 to 2 percent increments?	_____	_____
22. Steps 2 through 15 repeated for each increment of water added?	_____	_____
23. If soil is plastic (clay types):		
a. Samples mixed with water varying moisture content by 1 to 2 percent, bracketing the optimum moisture content?	_____	_____
b. Samples placed in covered containers and allowed to stand for at least 12 hours?	_____	_____
24. If material is degradable:		
Multiple samples mixed with water varying moisture content by 1 to 2 percent, bracketing the optimum moisture content?	_____	_____
25. Process continued until wet density either decreases or stabilizes?	_____	_____
26. Moisture content and dry density calculated for each sample?	_____	_____
27. Dry density plotted on vertical axis, moisture content plotted on horizontal axis, and points connected with a smooth curve?	_____	_____
28. Moisture content at peak of curve recorded as optimum water content and recorded to nearest 0.1 percent?	_____	_____
29. Dry density at optimum moisture content reported as maximum density, to nearest 1 kg/m^3 (0.1 lb/ft^3)?	_____	_____

If "No" was discrepancy corrected?	**Yes**	**No**
Date of "Split Sample" _____		

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Signature of Examiner _____

INDEPENDENT ASSURANCE
LIMITED OBSERVATION CHECKLIST

Name _____
Qualification # _____ Date _____

DETERMINING THE LIQUID LIMIT OF SOILS
FOP FOR AASHTO T 89

Tests Performed According to Procedure?	**Yes**	**No**
1. Describe the inspection for wear of the liquid limit device:	_____	_____
a. Wear at contact between cup and base ½" or less?	_____	_____
b. Edge of cup no less than ½ original thickness?	_____	_____
2. Describe how the height of the cup drop is adjusted:	_____	_____
a. Checked before each use?	_____	_____
b. Turn crank while holding gauge in position under cup?	_____	_____
c. Check for ringing or clicking without rising of cup?	_____	_____
d. Cup does not rock?	_____	_____
3. Describe initial sample preparation:	_____	_____
a. Material separated on appropriate sieves?	_____	_____
b. Soil sufficiently pulverized for separation of grains?	_____	_____
c. Material passing the # 40 recombined and mixed?	_____	_____
4. Describe the preparation of the liquid limit sample for Method A:	_____	_____
a. Sample mass approximately 100 g. of minus #40?	_____	_____
b. Mixed in dish with 15 to 20ml of distilled or demineralized water?	_____	_____
c. Mix by stirring, chopping, kneading with spatula until stiff consistency?	_____	_____
d. No dry soil added to lower moisture content?	_____	_____
5. Material placed in cup, centered, 10 mm thick?	_____	_____
6. Soil divided by using up to 6 strokes, preventing tearing or slipping of soil pat?	_____	_____
7. Cup lifted and dropped at a rate of 2 per second?	_____	_____
8. Pat halves come together over length of ½"?	_____	_____
9. Moisture container tare mass determined?	_____	_____
10. Moisture sample properly taken and wet mass determined?	_____	_____
11. Moisture content determined by AASHTO T 265?	_____	_____
12. Multiple tries conducted to achieve sample in shock ranges of 25-35, 20-30, and 15-25?	_____	_____

Tests Performed According to Procedure?	**Yes**	**No**
13. Flow curve plotted with shocks on logarithmic scale and the moisture on arithmetic scale?	_____	_____
14. Liquid Limit correctly calculated and rounded to nearest whole number?	_____	_____
15. Reported on standard agency form?	_____	_____

If "No" was discrepancy corrected? **Yes** **No**

Date of "Split Sample" _____

Signature of Examiner _____

INDEPENDENT ASSURANCE
LIMITED OBSERVATION CHECKLIST

Name _____
Qualification # _____ Date _____

DETERMINING THE PLASTIC LIMIT AND PLASTICITY INDEX OF SOILS FOP FOR AASHTO T 90

Tests Performed According to Procedure?	**Yes**	**No**
1. Describe the preparation of the plastic limit sample:	_____	_____
b. Sample may be obtained from preparations for liquid limit test sample?	_____	_____
b. Sample mass approximately 20 g of minus #40?	_____	_____
c. Mix in dish with enough distilled or demineralized water until easily shaped into ball?	_____	_____
d. Approximately 8 g sample obtained?	_____	_____
2. 1.5 to 2.0 mass obtained from ball?	_____	_____
3. Sample squeezed into ellipsoidal mass?	_____	_____
4. Mass rolled into 1/8" thread at rate of 80-90/min?	_____	_____
5. Thread broken into six or eight pieces, recombined, and rolling repeated?	_____	_____
6. Moisture sample obtained when thread just begins to crumble?	_____	_____
7. Tare mass of moisture container determined?	_____	_____
8. Moisture sample properly taken and wet mass determined?	_____	_____
9. Moisture content determined by the FOP for AASHTO T 265?	_____	_____
10. Multiple tries conducted until 8 g of original sample used?	_____	_____
11. Plastic limit correctly calculated and rounded to nearest whole number?	_____	_____
12. Plasticity index determined by subtracting plastic limit from liquid limit?	_____	_____
13. Plasticity index reported to the whole number?	_____	_____
14. Reported on standard agency form?	_____	_____

If "No" was discrepancy corrected? **Yes** **No**
Date of "Split Sample" _____

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Signature of Examiner _____

INDEPENDENT ASSURANCE
LIMITED OBSERVATION CHECKLIST

Name _____
Qualification # _____ Date _____

IN-PLACE DENSITY AND MOISTURE CONTENT OF SOIL AND SOIL-AGGREGATE BY NUCLEAR METHODS (SHALLOW DEPTH) FOP FOR AASHTO T 310

Tests Performed According to Procedure?	**Yes**	**No**
1. Gauge turned on 10 to 20 minutes before use?	_____	_____
2. Calibration verified?	_____	_____
3. Standard count taken and recorded in accordance with manufacturer's instructions?	_____	_____
4. Test location selected appropriately 10 m (30 ft) from other radioactive sources, 3 m (10ft) from large objects, 150 mm (6 in) away from vertical projections?	_____	_____
5. Loose, disturbed material removed?	_____	_____
6. Flat, smooth area prepared?	_____	_____
7. Surface voids filled with native fines to 3 mm (1/8 in) maximum thickness?	_____	_____
8. Hole driven 50 mm (2 in) deeper than probe depth?	_____	_____
9. Gauge placed, probe placed, and source rod lowered without disturbing loose material?	_____	_____
10. Method A:		
a. Gauge firmly seated, and gently pulled so that the source rod is against the side of the hole toward the scaler / detectors?	_____	_____
b. Two, one-minute reading taken; wet density within 32 kg/m^3 (2 lb/ft^3)?	_____	_____
c. Density and moisture data averaged?	_____	_____
11. Method B:		
a. Gauge firmly seated, and gently pulled so that the source rod is against the side of the hole toward the scaler / detectors?	_____	_____
b. A minimum of a one-minute reading taken; density and moisture data recorded?	_____	_____
c. Gauge turned 90° or 180° (180° in trench)?	_____	_____

OVER

Tests Performed According to Procedure?	**Yes**	**No**
d. Gauge firmly seated, and gently pulled so that the source rod is against the side of the hole toward the scaler / detectors?	_____	_____
e. A minimum of a one-minute reading taken; density and moisture data recorded?	_____	_____
f. Wet densities within 50 kg/m^3 (3 lb/ft^3)?	_____	_____
g. Counts averaged for density and moisture?	_____	_____
12. Representative sample (4 kg or 9 lbs) obtained from test location?	_____	_____
13. Sample sealed immediately to prevent moisture loss?	_____	_____
14. Moisture content determined using FOP's for AASHTO T 255/T 265?	_____	_____
15. Dry Density calculated using proper moisture content?	_____	_____

If "No" was discrepancy corrected? **Yes** **No**

Date of "Split Sample" _____

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Signature of Examiner _____